Rangeland Monitoring to Inform Grazing Management in Eastern Colorado

COMMUNITY BACKGROUND

Virtual Fencing is being trialed at Red Top Ranch.

NASA DEVELOP is using satellite data to analyze biomass to support virtual fencing efforts for partners interested in grazing management and conservation.

2 spatial datasets were analyzed to quantify biomass within the study area.

- **ARS Biomass Raster** (Agricultural Research Service)
- **LANDFIRE** Existing Vegetation Layers

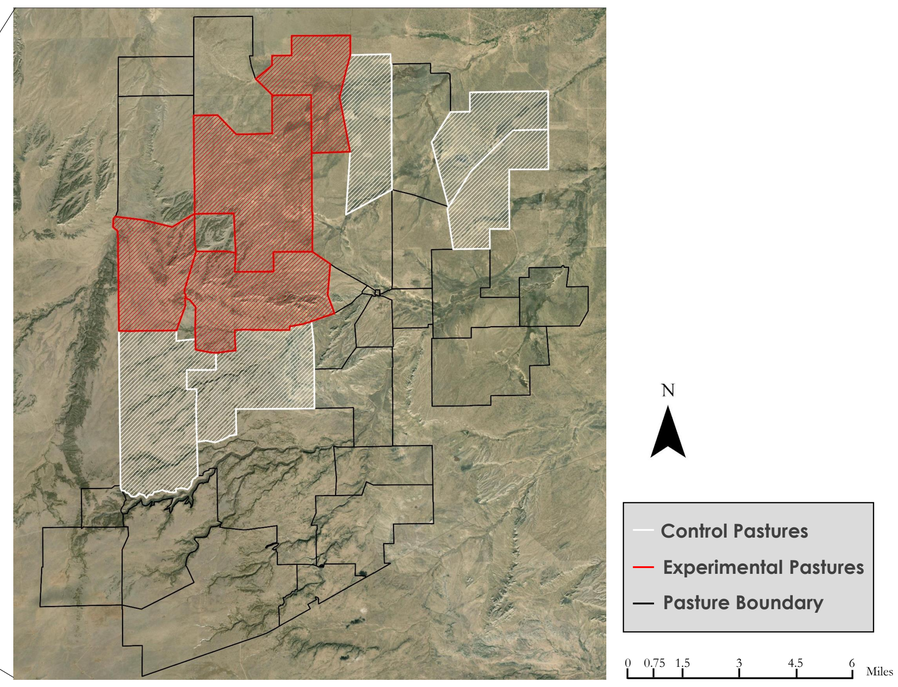

Figure 1. Study Area map showing Red Top Ranch and its pastures. Red polygons are experimental pastures where virtual fencing is being trialed. White polygons are the control pastures where normal management continues.

Monthly Biomass Maps (2022)

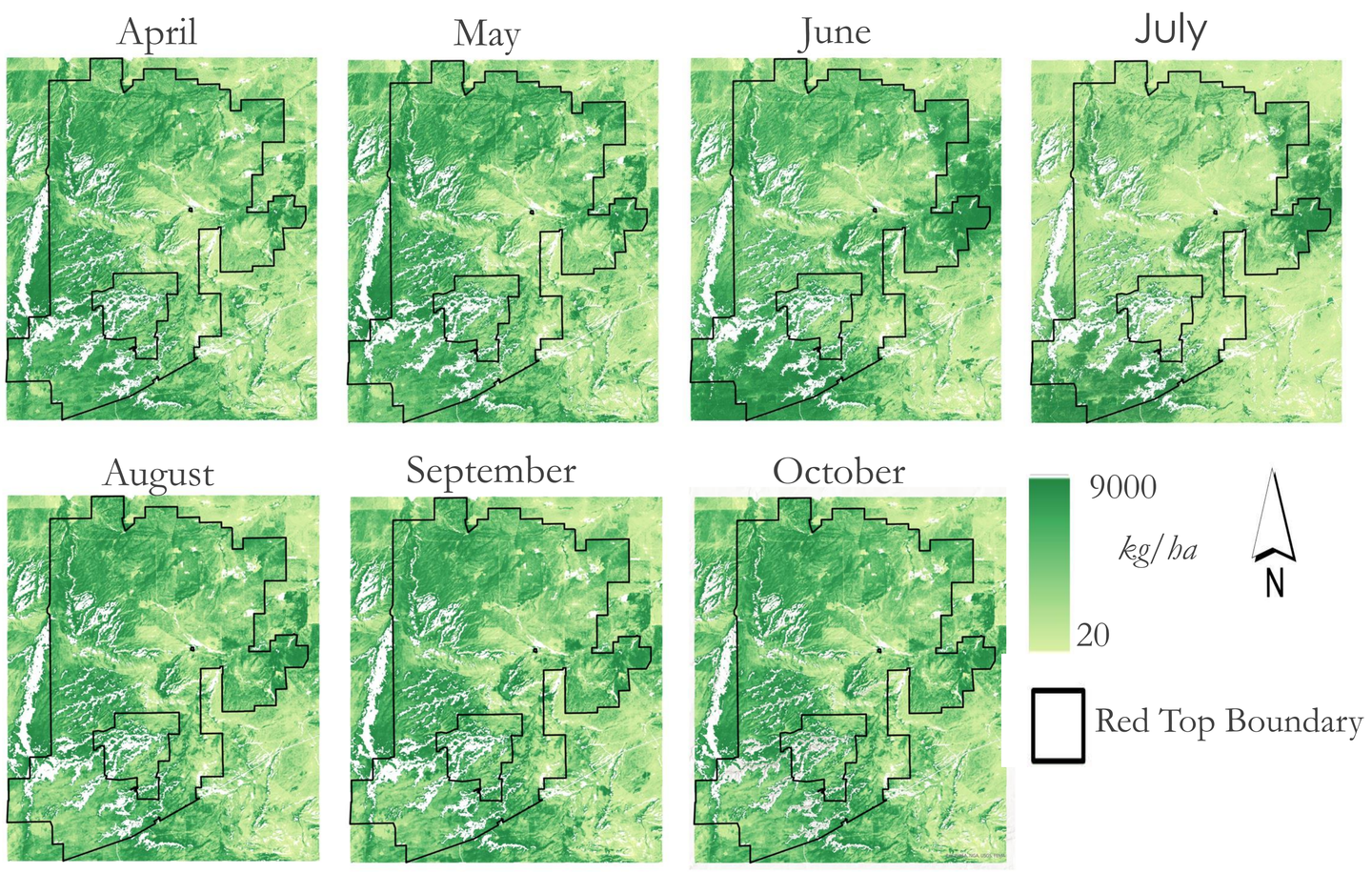

Figure 2. Monthly biomass maps using ARS 2022 data. The light green shows low biomass values and the dark green show high biomass values.

Day of Year Max (2022)

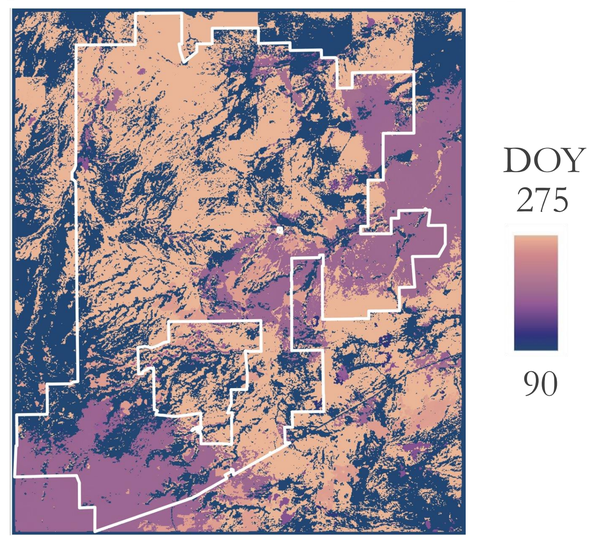

Figure 3. Map of the day of year for the maximum biomass value per pixel. Light orange represents days later in the year and dark purple represent days closer to June (Day 90).

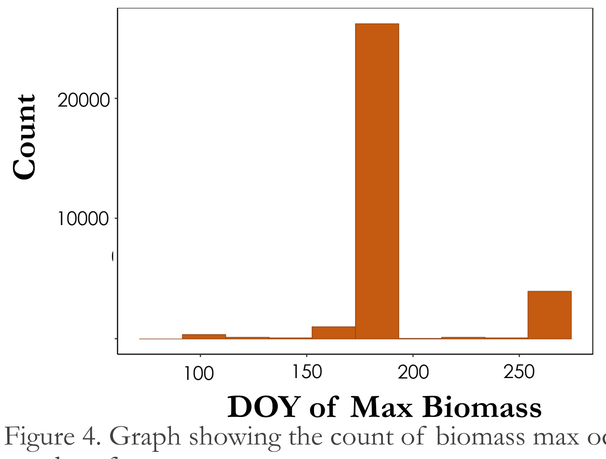

Figure 4. Graph showing the count of biomass max occurrence per day of year.

TAKEAWAYS

1. ARS biomass dataset is a tool that can map the monthly biomass accumulation throughout the year and determine the maximum biomass values. This information can be given to ranch managers to inform their grazing rotation plans.
2. Pixels had highest values of max biomass in June through August in 2022, during the growing season. Second peak occurs in the middle of September due to regrowth of cool-season plants.
3. Additional field validation should be used as the ARS biomass dataset was developed for a study area in Northern Colorado with different vegetation types. LANDFIRE proved useful for our study area to isolate specific vegetation cover types of interest.

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